

Emergency Action Plan

for

Wageman Dam

Dam ID: OR00496

Located at:

1200 Reston Road

Douglas County, Oregon

Owner:

Edward J. Wageman

Dated: September 2014

RECEIVED BY OWRD

OCT 15 2014

SALEM, OR

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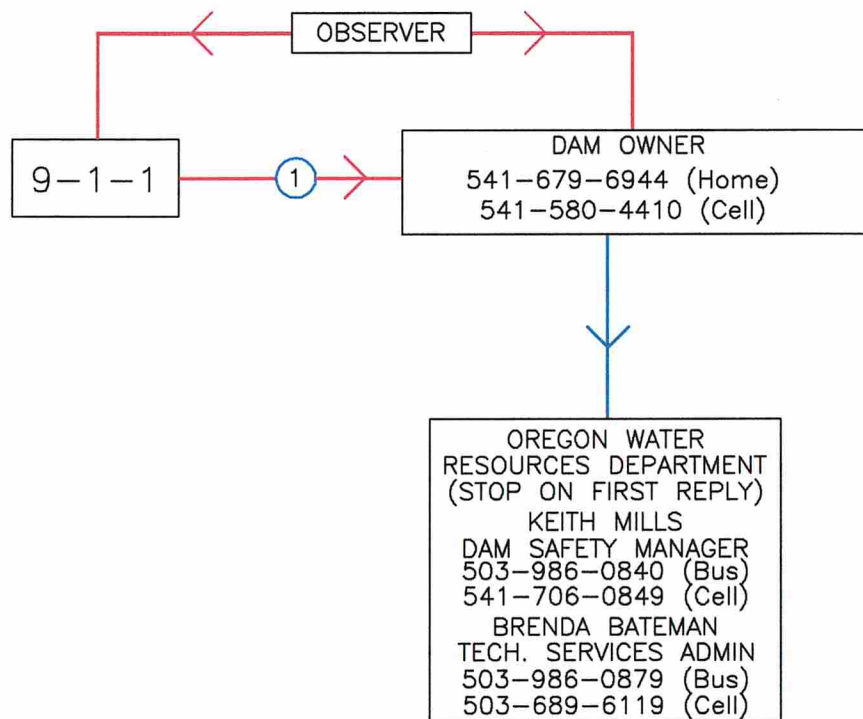
**EMERGENCY ACTION PLAN
WAGEMAN DAM
DOULGAS COUNTY, OREGON**

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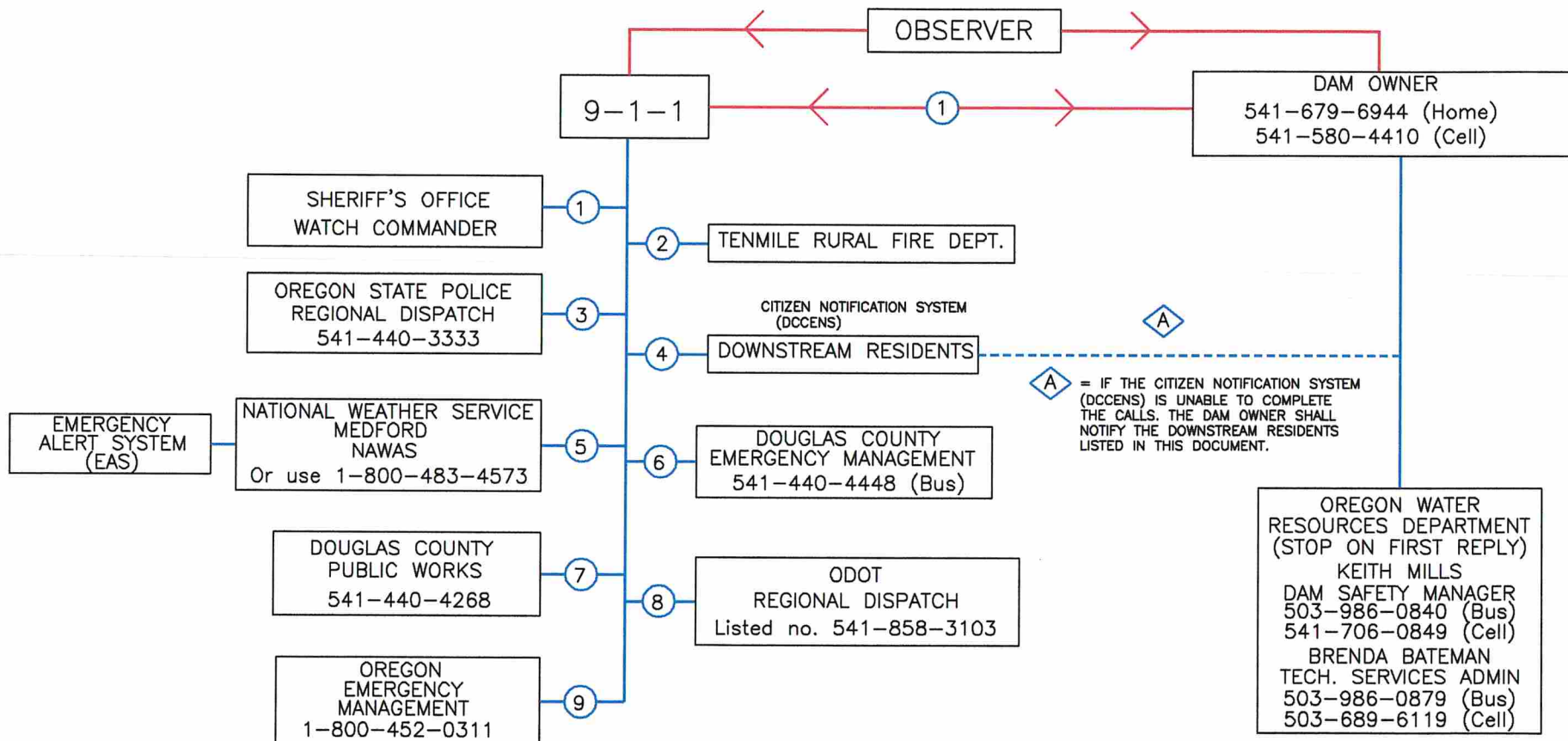
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**WAGEMAN DAM
EAP FLOWCHART
NON-EMERGENCY - UNUSUAL EVENT**



NOTE: If you get voice mail when you call a number, leave a message, and call alternates (if any). If alternates also have voice mail, leave a message and continue with your contacts. Do not spend time trying to go through a menu of options to reach a person. After you have completed your contacts, you can take time (if possible) to go back and try to reach a person.

**WAGEMAN DAM
EAP FLOWCHART
POTENTIAL, IMMINENT OR FAILURE IN PROGRESS**



POTENTIAL EMERGENCY

Message: I am reporting an emergency at Wageman Dam near Tenmile. This is [name and position] with the [____]. At this time it is a potential dam failure. Please inform [____], [____] county Emergency Services, and make other emergency contacts as necessary to prepare for possible evacuations. I am at [location] and be reached at [phone number]. We are taking emergency actions to save the dam, and will contact the State Dam Safety Engineer and our Engineer for technical advice on preventing a dam failure and flood.

NOTE: If you get voice mail when you call a number, leave a message, and call alternates (if any). If alternates also have voice mail, leave a message and continue with your contacts. Do not spend time trying to go through a menu of options to reach a person. After you have completed your contacts, you can take time (if possible) to go back and try to reach a person.

URGENT EMERGENCY

Message: I am reporting an emergency at Wageman Dam near Tenmile. This is [name and position] with the [____]. This is an Urgent Emergency, the dam is failing and a dam breach flood will occur. People are in danger and need to evacuate. Please implement the emergency action plan. I am at [location] and be reached at [phone number] after you have made emergency notifications.

Stay on the phone with the 9-1-1 operator until you both agree necessary information has been exchanged and the emergency response effectively initiated.

1. Basic EAP Data

Purpose: This EAP contains pre-planned actions to reduce the risk of human life loss and injury and minimize property damage during an emergency event at Wageman Dam. It allows people with limited dam familiarity to act decisively during an unusual or emergency situation.

Potential Impacted Area

See Inundation Map in SECTION 5 on page 16 for the locations that may be flooded if the dam should fail. The maps also show the estimated time for the flood wave to travel from the dam to affected locations: The impacted area is in Douglas County. The rural areas of Tenmile down to Olalla along Tenmile Creek will be affected by a dam failure. The inundation area includes Highway 42 between milepost 64 and milepost 68. The following rural roads segments are affected: Lockwood Road from 0.1 miles to 0.3 miles from Reston Road and Gumdrop Lane.

Directions to dam

From Winston head west on Highway 42 to milepost 64.2 turn right on Reston Road (County Road No. 5). Travel approximately 1.2 miles northward to the 1200 block of Reston Road. The drive is on the left side of the road; travel about quarter mile past the house and barns to back pasture land. At the west end of the pasture is the dam.

Dam Description

Length:	500 feet
Height:	40 feet
Width:	16 feet at crest
Slope:	u/s 3H:1V, d/s 2H:1V avg.
Drainage Area:	0.29 square miles
Total Capacity:	70 Acre-feet
Freeboard:	5 feet
Built:	August 8, 1978
Type:	Earth Embankment
Hazard Classification:	High
Legal Description:	T28S/R8W/Sec 25 WM
Dam Owner:	Douglas County
Latitude:	43.1040
Longitude:	-123.59006
National Inventory of Dams #:	OR-00496
Oregon Dam Safety File Number:	W-79

2. Roles and Responsibilities

Dam Owner – Land Owner of 1200 Reston Road, Roseburg, Oregon.

1. As soon as an emergency event is observed or reported, immediately determine the emergency level as described in page 8.
2. Make notifications as shown on pages 1 or 2.
3. Monitor dam for changing conditions, and take all actions to save the dam if an Potential Dam Failure exists.
4. Provide updates of Potential Failure and Occurring Failure situations to the acting Incident Commander or 9-1-1 dispatcher to assist them in making timely and accurate decisions regarding warnings and evacuations.
5. Provide leadership to assure the EAP is reviewed and updated as needed and copies of the revised EAP are distributed to all who received copies of the original EAP.

Incident Commander – the leading public servant in charge.

1. Serve as the primary contact person responsible for coordination of all emergency actions.
2. Review the inundation map, and determine if an evacuation map based on this inundation map is needed. An evacuation map should indicate what areas will be evacuated, and what agency is responsible for evacuation.
3. Determine roles and responsibilities of local public safety agencies.
4. When a Potential Failure Emergency occurs, prepare emergency management personnel for possible evacuations that may be needed if an Urgent Dam Failure situation occurs.
5. When an Urgent Dam Failure Emergency occurs, initiate warnings and organize evacuations.
6. Notify local emergency management services to carry out the evacuation of people and close roads within the evacuation area (see Inundation Map, Section 5).
7. Decide when to terminate the emergency (for Potential Dam Failure and Urgent Dam Failure Emergency).
8. Participate in review and updates of the EAP.

Public Safety Agencies

Douglas County Sheriffs
Douglas County Public Works
City of Winston Police
Lookingglass Rural Fire Department
Tenmile Rural Fire Department
Oregon Department of Transportation
Oregon State Police

The Public Safety Agencies identified as participants in this EAP, do not assume responsibility and are not responsible for the safety of the dam or for injury (including death) to persons or damage to property resulting from its failure. Said Agencies neither represent nor imply by participating in the EAP that it is safe to occupy the area within the dam's inundation zone.

Oregon Dam Safety Engineer and/or Dam Owners Engineer

1. Assist dam owner in determination of emergency level.
2. Consult with OERS on scope of emergency for Potential Dam Failure and Urgent Dam Failure emergencies.
3. Advise the dam owner on appropriate actions that can save the dam during a Potential Dam Failure.
4. Provide technical information to the dam owner and incident commander during Urgent Dam Failure
5. Conduct a forensic investigation of the dam failure.

Oregon Emergency Response System (OERS)

1. Advise the Governor on State Emergency Declarations and State resources needed.
2. Direct internal and other agency staff during a State Emergency.

Responsibility for Emergencies or Evacuations

Emergency Evacuations will occur when flooding is anticipated, or a failure is imminent or has occurred.

Local government authorities and emergency response organizations have statutory authority to respond to emergencies. Once Douglas County Communications/9-1-1 has been notified that conditions exist which meet the criteria for emergency evacuations, Communications will notify emergency response agencies.

The Douglas County Sheriff's Office will take lead role in the coordination of public warning and emergency evacuations.

Local response agencies endeavor to protect lives and property. Response to emergencies from local agencies is dependent on staffing levels at the time of the emergency and other incidents occurring in the County.

In the event of catastrophic dam failure of which there is limited advance warning, public safety agency rescue efforts may be infeasible or insufficient to prevent death or injury to persons with dam inundation zone, particularly those who are immediately downstream of the dam.

3. Five Step EAP Process

There are five critical steps to successful and implementation of the emergency action plan. These steps are summarized below and covered in detail on the following pages.

Step 1 Event Detection – Dam specific modes of failure

Step 2 Emergency Level Determination

Step 3 Notification and Communication

Step 4 Expected Actions

Step 5 Termination

Step 1. Event Detection (of reasonably possible modes of failure)

This step provides dam specific indicators of a possible emergency at Wageman Dam. Unusual or emergency events may be detected by:

- Observations at or near the dam by government personnel (local, state, or Federal), landowners, visitors to the dam, or the public;
- Unusual events: flash floods, earthquakes or landslides;

Pre-existing conditions on this dam: A small amount of seepage has been noted along the outside of the outlet pipe. Brush and small trees have rooted into the crest and downstream face of the dam which may lead to piping along the roots.

A dam emergency may exist if there is any actual or anticipated flow of water in a location where it has not and should not occur. Emergencies may also exist if there is cracking or slope movement, or structural damage.

The most realistic modes of failure are classified as follows:

- A. Flood overtopping or dam overfilling
- B. Leakage and internal erosion
- C. Embankment or reservoir movement
- D. Other structural damage

The text that follows provides very general information on conditions that might indicate an Emergency. If any of these unusual conditions are detected, immediately proceed to **Step 2** to determine the emergency level. More detail on these is found under **Step 2**. The reasonably expected (to look for, but still very unlikely) conditions are as follows.

A. Flooding or overfilling: Water flowing over the top of dams causes the most serious failures of earthen dams. High flows can also cause severe erosion and headcutting of the spillway, which if uncontrolled will lead to a dam breach.

Observations of water level compared to the crest of the dam are essential for detecting flooding or overfilling. Flash flood warnings may be used to determine when extra observations are needed. The standard freeboard or water level for this dam is 5 feet and

if water rapidly approaching the dam crest, or flowing over the crest, information on emergency level is found in the following section.

B. Leakage and internal erosion: A small volume of clear seepage is common on most earthen dams. An increase in seepage or a new area of seepage can sometimes be an indicator of a more serious problem. If there is muddy seepage this often indicates internal erosion of the dam, and is very serious. Sinkholes in the dam or whirlpools in the reservoir next to the dam can also indicate dam safety problems.

C. Embankment or reservoir movement: New and extensive or lengthy cracks (those not caused by drying) indicate dam movement or settlement. Actual visible movement of a portion of the dam is even more serious. Movement of a landslide above the dam or a large landslide actively moving above the reservoir can damage the dam or cause a large volume of water to flow over the dam. It is very important to actively inspect the dam for signs of movement after intense earthquake shaking or a long duration flood event.

D. Other structural damage: Any structural damage that restricts releases of water from the dam might constitute an emergency. This may include but is not limited to: A non-functional regulatory outlet valve; or blockage of the spillway preventing flow and leading to overtopping.

If these conditions are present, detail on determining whether it is an actual Emergency, and the Emergency level, is found under **Step 2**.

Even if an event is not listed above, any atypical situation that is or poses of risk of flooding downstream as a result of the dam is a potential emergency situation.

Normal and safe passage of flood waters (where flow is not increased as a result of the dam) are not emergency situations.

Step 2. Emergency Level Determination

After an unusual or emergency event is detected or reported, the Dam owner or representative is responsible for classifying the event into one of three **emergency levels**. As the emergency level increases, the seriousness of the emergency also increases as summarized below.

Non-Emergency - unusual event - slowly developing – inspect and monitor

Potential Dam Failure situation - rapidly developing – save dam

Urgent Dam Failure, imminent or occurring –save people

A **Non-Emergency** is an unusual condition that warrants inspection and monitoring for changes.

Potential Dam Failure indicates conditions affecting dam safety are rapidly changing and emergency actions, including repair, are essential. It is also essential that emergency managers are notified so that they can prepare if the situation worsens and evacuations are needed. However, the dam is not at imminent risk of failure (hours) at this Emergency. For non-emergency and potential dam failure, the dam owner should consult with the State Dam Safety Engineer and their engineer as needed to make determination the appropriate emergency level, if any.

Urgent Dam Failure, imminent or occurring, the priority is to notify 9-1-1 and save people. Actions at the dam under this emergency should be to protect persons on site, delay the flood if possible, and inform emergency managers on status of flooding at the dam. Guidance to determine emergency level is organized the same way as emergency detection in step 1. The following criteria are guidelines, since actual failure situations are unique.

A. Flooding or overfilling:

A.1 – Unusual Condition Indicators

- A Flash Flood Warning has been issued by NWS for western Douglas County and the spillway is already flowing.
- The spillway is partly obstructed by woody debris with the spillway flowing.
- The reservoir water level is within 2-feet of the dam crest.

A.2 – Potential Failure Indicators

- The reservoir level is one foot below the dam crest and rising.
- The reservoir level is at the crest of the dam, but is not rising, and there is no embankment erosion observed.
- Headcutting of spillway is actively occurring, moving rapidly towards the reservoir, and 20 to 100 feet from dam.
- Release valve becomes inoperable, leading to rise in reservoir level
- The reservoir is nearly full and the weather forecast includes heavy rain or rapid snowmelt.

A.3 – Imminent Failure Indicators

- A dam breach is occurring and flows are rapidly increasing.
- The reservoir level is at crest of the dam and rising.
- Water is flowing over the dam crest, onto and eroding the embankment.
- Severe headcutting in spillway is within 20 feet of the reservoir and visible progression towards dam is observed while on site.
- The spillway sidewall has failed and flood flows are rapidly eroding embankment.

B. Leakage and internal erosion:

B.1 – Unusual Condition Indicators

- A never before observed seep location in the downstream face or abutment of the dam is identified.
- There is noticeable increase flow at an existing seep or drain over a period of a week or less that is not related to or justified by high reservoir levels.
- There is a small and clear leak through an animal hole or root hole (less than 20 gallons per minute).
- Deposits of material likely eroded from the dam are observed at seepage locations or below internal drain pipes, with clear drainage water.

B.2 – Potential Failure Indicators

- Rapidly increasing seepage is observed and measured (doubling in a week or less).
- There is rapid leakage through the dam (over 1 cfs).
- There is muddy seepage coming directly out of the dam.
- There is a sinkhole on the dam that is 2-foot or more in diameter and over 6-inches deep.
- A whirlpool is observed in the reservoir near the dam and this whirlpool is not associated with the spillway or intake works.
- A boil (water upwelling with critical hydraulic gradient) is observed in the dam, or just below the dam.
- The reservoir level is falling without apparent cause.

B.3 – Imminent Failure Indicators

- Internal piping erosion in dam is observed, is still occurring, and flow exceeds 10 cfs.
- There is a sinkhole over 3-feet in diameter in the dam, and the sinkhole is getting larger over a period of a day or less.
- There is a large and eroding sinkhole, boil, or piping through the dam, that has caused a drop in portion of the dam crest.
- There is any internal erosion causing crest drop and water to flow over the crest of the dam.

C. Embankment or reservoir movement:

C.1 – Unusual Condition Indicators

- New cracks not associated with drying are observed, there is no seepage through the cracks, and the measurable crack gap is less than 1-inch.
- A small, shallow and isolated landslide occurs on the downstream face of the dam.

C.2 – Potential Failure Indicators

- New cracks are observed, with reservoir leakage through the cracks.
- A new crack is observed that causes a crest drop of over two inches.
- A deep landslide moves part of the embankment but does not extend into upstream slope of the dam.
- There is observable movement of a large landslide (over ¼ acre) on natural slopes above the dam.

C.3 – Imminent Failure Indicators

- A deep landslide moves part of the embankment and extends into upstream slope of the dam to the water level.
- There are multiple landslides on the embankment with continued movement.
- Rapidly increasing and muddy leakage is observed through cracks that extend below water level.
- There is any embankment or reservoir slope movement that results in continuous water flow over the crest of the dam.

D. Other structural damage:

D.1 – Unusual Condition Indicators

- The primary outlet for the dam is not functional.
- There is a moderate earthquake (Richter Magnitude 5.0 or greater) close to the dam, and the dam has not yet been inspected.
- A major subduction zone earthquake has occurred affecting Oregon, and the dam has not yet been inspected.

D.2 – Potential Failure Indicators

- Blockage of the spillway is observed, water is backed up over spillway channel causing erosion of dam embankment material.

D.3 – Imminent Failure Indicators

- There is any damage that causes water to flow over the crest and erode the dam.

Step 3. Notification and Communication

After the emergency level has been determined, essential notifications shall be made immediately.

Non-Emergency, unusual conditions, are slow developing and does not pose a near term risk of dam failure. When present, the dam owner should contact OWRD and their Engineer. The owner should describe the situation, and request technical assistance on next steps to take. Notifications shall be made per page 1.

The dam owner should consult with the Engineer(s) on notification flowchart to confirm emergency classification. The Engineer(s) should travel to the site if there is any question about emergency classification.

Potential Dam Failure is a situation that has or is rapidly developing, and has the potential to progress to a dam failure. However, dam failure is not imminent.

Urgent Dam Failure, Imminent or Occurring is a dam breach or dangerous flooding occurring or imminent. If an outside observer or any official notices or is notified of a dam failure in progress, **call 9-1-1**.

After emergency contacts are made by the 9-1-1 dispatcher, let them know you will advise them when the situation is resolved or if the situation gets worse. Fill out the contacts and events log as time permits.

Refer to Materials and heavy equipment in Appendix A.

Refer to residents in inundation area in Appendix B.

Emergency Phone Contacts

Agency/Organization	Principal Contact	Primary Telephone Number	Alternate Telephone Number	Alternate Contact
Dam Owner	Carolyn Dowdy	(541) 679-6944	(541) 580-4410	
Emergency Management	Wayne Stinson	(541) 440-4448		Douglas County Sheriff
OWRD Dam Safety Engineer	Keith Mills, P.E.	(503) 986-0840	(541) 706-0849	
Dam Owner's Engineer	Nathan Reed, P.E.	(541) 784-7191		
National Weather Service	24 hour contact	1-800-483-4573		
Oregon Emergency Response System (OERS)	24 hour contact	1-800-452-0311		

Step 4. Expected Actions

After determining the emergency level and making initial notifications, the dam owner is expected to take all necessary and safe actions to protect the dam. If a citizen calls 9-1-1 and reports observations of an unusual or emergency event at the dam, 9-1-1 will immediately contact the dam owner. The dam owner will determine if there is an emergency. If there is an emergency, the dam owner will, as time permits, determine the emergency level.

The dam owner is responsible for directing all actions under Non-Emergency, as follow.

Non-Emergency, unusual event; slowly developing

The dam owner with the aid of an engineer with dam knowledge will inspect the dam. The dam owner will assure the dam is monitored and repaired as needed and possible to prevent the emergency from becoming more serious. In many cases, it will be necessary to safely release water through low level conduits.

If conditions become more serious in a short time, the emergency level should be increased.

Potential dam failure situation; rapidly developing

At this point the two priorities are:

- 1) To prepare for evacuation, emergency repair to save dam. The dam owner will call the OWRD dam safety engineer or an engineer with dam knowledge. As available, one or both will make every effort to get to the dam site to inspect the dam, investigate the situation, and recommend corrective actions.
- 2) The dam owner will contact 9-1-1 dispatch, who will in turn contact the emergency manager to inform him/her that the EAP has been activated and if current conditions get worse, an emergency situation may require evacuation. Preparations should be made for possible road closures and evacuations. The dam owner or representative will update the emergency manager/incident commander as conditions at the dam change.

The dam owner will order materials, equipment and supplies that are needed and likely to save the dam. See Resources Available (Appendix A) for sources of equipment and materials to assist with dam saving actions. The following actions should be applied as needed for Emergency Level 2 conditions. Close monitoring of the dam must be maintained to confirm the success of any remedial action taken at the dam.

The dam owner is responsible for actions to save the dam, which may include:

ACTIONS TO SAVE THE DAM

For almost all emergency situations, lower reservoir level using the following actions

1. Open all conduits if they can be opened safely, using manual, backup or emergency procedures if needed.
2. Increase the crest height using sandbags or a sand tube if water is likely to flow over the crest.
3. Cover the weak areas of the top of the dam and downstream slope with riprap or gravel as available.
4. Set up a siphon and or pump to remove additional water from the dam.

The exception to the actions above is for damage or leakage from a conduit, where opening the conduit may cause additional dam distress.

Additional actions by type of emergency follow.

A. Flood overtopping or dam overfilling

1. Remove material blocking the spillway, including debris or vegetation.
2. Place rip rap into a headcut in the spillway.

B. Leakage and internal erosion

1. If a whirlpool or other seepage entry point is observed, reduce the flow by plugging the entrance with rip rap if available, or anything large like hay bales if rip rap not available or effective.
2. Cover the seepage exit area(s) with an emergency filter. A typical emergency filter is one foot of concrete mix sand on the seepage area (as long as most of it does not wash away), then one foot of crushed rock gravel over the sand, and then rip rap over the gravel until the flow volume significantly decreases or at minimum stops increasing, or it becomes unsafe to work at this location.
3. Construct sandbag or other types of ring dikes around seepage exit areas to retain a pool of water, providing backpressure and reducing the erosive nature of the seepage.
4. Dump sandbags onto boils or leaks
5. Keep vehicles and equipment downstream from the area of leakage to avoid potential loss from the collapse of an underground void. Equipment may work from the crest if it is not dropping or otherwise hazardous.

C. Embankment or reservoir movement

1. Direct water away from cracks by any safe means possible.
2. Restore freeboard by fill placement in consultation with engineer.
3. Stabilize slides as directed by a geotechnical engineer.

D. Other structural damage

1. Follow advice of a qualified engineer

Urgent Dam Failure; appears imminent or is in progress:

At this level, the necessary actions are protecting people. This is an emergency manager responsibility. Upon verification of an Urgent Dam Failure emergency by the dam owner, 9-1-1 Dispatch shall activate the Douglas County Citizens Emergency Notification System (DCCENS). The Incident Commander shall lead actions to efficiently evacuate people to safe locations. All assisting first responders need to be advised on the situation and their role. This includes warnings, closing roads, and directly notifying people at risk downstream from the dam (see Inundation Maps, Section 5).

The National Weather Service shall issue watches and warnings as appropriate. A watch is normally appropriate for a Potential Dam Failure emergency, and a warning is normally appropriate for an Urgent Dam Failure emergency.

Step 5. Termination

Whenever the EAP has been activated and an Urgent Dam Failure emergency declared, the Incident Commander will determine when the emergency is over based on actual conditions. The Incident Commander will relay this decision to the dam owner and other Emergency Responders. The Dam Owner shall contact OERS to inform them the emergency has been terminated.

Prior to termination of an Urgent Dam Failure (imminent) event that has not caused actual dam failure, the State Dam Safety Engineer will inspect the dam or require the inspection of the dam to determine whether any damage has occurred that could potentially result in loss of life, injury, or property damage. If it is determined conditions do not pose a threat to people or property, the Incident Commander will be advised to terminate EAP operations as described above.

Prior to Termination of a Potential Dam Failure Emergency, the State Dam Safety Engineer should be consulted.

A Non-Emergency may be terminated when conditions return to normal, or after an engineer determines that the unusual conditions pose no dam safety risk.

4. Inundation Map and Evacuation Plan

A set of inundation maps for a dam failure during Probable Maximum Flood (PMF) conditions, is included herein. These maps were developed based on a dam breach analysis completed June 24, 2009 by WEST Consultants. The estimated area of inundation for the PMF condition is outlined in red. The set of maps consist of one sheet, covering the area from the dam to the confluence with Olalla Creek. Base mapping is from 2009 flight aerial photography entered into the County's GIS database, scaled to 1:12,000 (2.64 inches equals 0.5 mile), 40 foot contour intervals and dates varying from 1986 to 1990.

Failure during PMF conditions means that creek/river levels downstream of the dam are at PMF levels prior to the dam failing. The PMF is: "The flood that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the drainage basin under study."

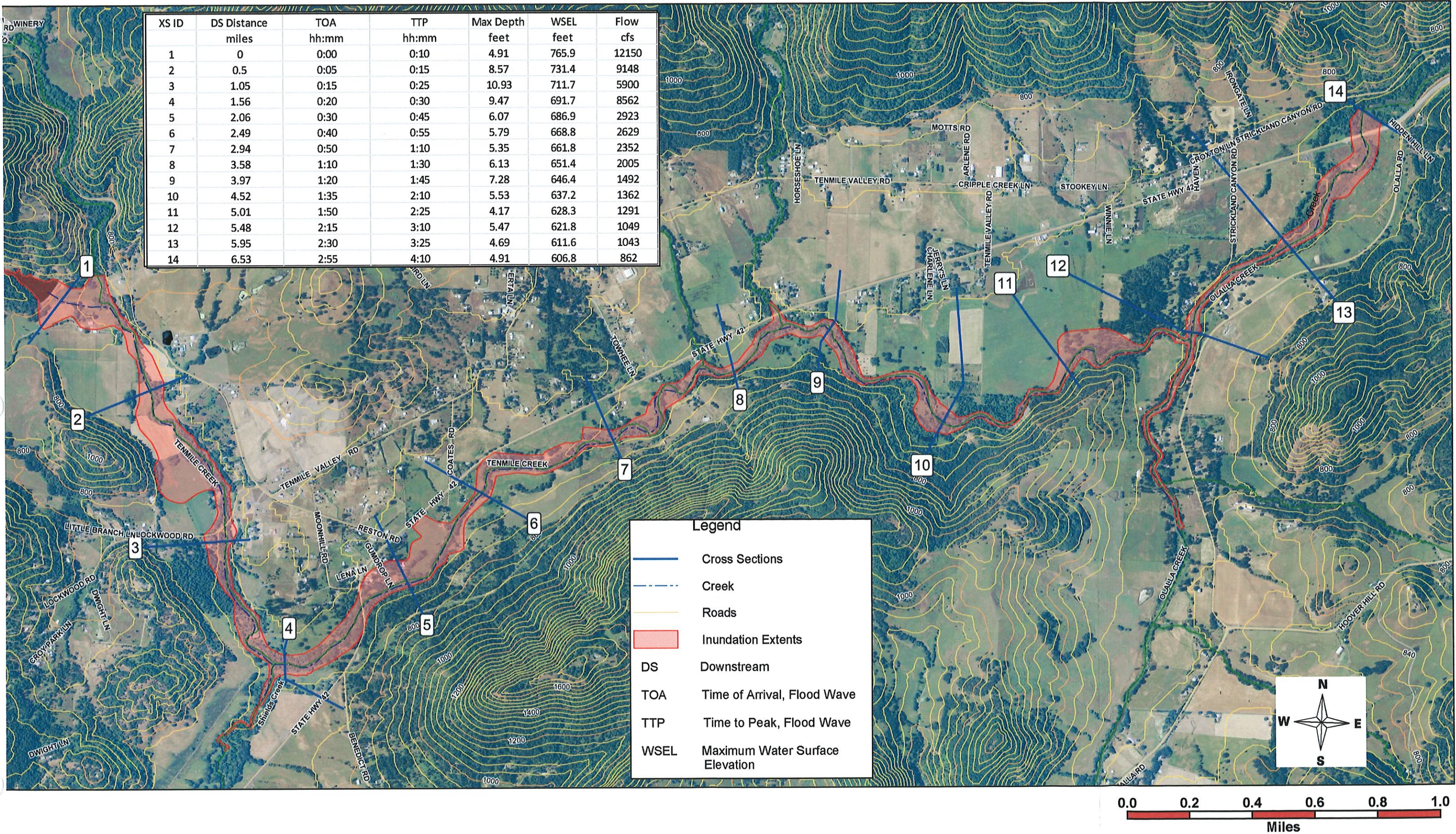
Shown on the maps are cross-sections at nine locations downstream of the dam. Each cross-section provides the following information:

1. Cross-section number; (XS ID)
2. Distance from dam; (DS Distance)
3. PMF Wave arrival time (when the creek/river begins to rise); (TOA)
4. PMF Time to Maximum elevation that the flood reaches; (TTP)
5. PMF Peak (maximum depth from bottom of channel to surface); (Max Depth)
6. PMF Peak (maximum water surface elevation); WSEL
7. PMF Maximum Flow; (Flow)

Time is the elapsed time since dam failure began. In the event of an actual dam failure, the level of creeks/ivers downstream of the dam prior to failure should be assessed, and judgment exercised in the selection of the maps used. These maps offer the user a guideline for establishing evacuation zones. The mapping was terminated at the Olalla Creek because: For a failure during PMF conditions, the water level would be at or below the banks of the Tenmile Creek and Olalla Creek, and people would already be on alert due to the extreme flooding.

During times of flooding in the Umpqua River Basin, the National Weather Service, River Forecast Center, issues flood warnings and forecasted stages at selected locations. This has been going on for years in the basin.

Wageman Dam Inundation Map



Appendices

- A. Resources Available**
- B. List of Downstream Residents**
- C. Log of Events**
- D. Signatures of responsible parties**
- E. Maintenance of EAP's and Revisions**
- F. Record of Holders of Control Copies**
- G. Record of Revisions and Updates**
- H. Glossary**
- I. PMF Flood Wave Summary**

NOTES

A. Resources Available

This is a table developed with contacts for all suppliers and equipment that might be needed in an emergency. This table has included:

Excavation Services	Mark Brint (541) 643-1816	
Sand and gravel supply	Knife River (541) 679-6744	Umpqua Sand & Gravel (541) 673-1088
Ready-mix concrete	Knife River (541) 679-6744	Concrete Service of Roseburg (541) 673-1060
Pumps	Tim Allen Equip (541) 672-3409	United Rental (541) 673-4371
Diving contractors		
Sand bags or sand tubing	Willamette Graystone (541) 673-3322	Lowes (541) 464-3720
	DC Co-op (541) 673-0601	Home Depot (541) 672-1823
Special grouts and Cement suppliers	Knife River (541) 679-6744	
Specialist Engineers		

B. List of Downstream Residents

Seq	Name		Phone	Address	
1	Cedarholm	Jack & Deborah	679-2366	990	Reston Road
2	Shiro	Nick & Diane	679-4954	982	Reston Road
3	Nuzum	Donald & Vivian	679-5378	1052	Reston Road
4	Gugel	Scott & Sandy		964	Reston Road
1				800	Reston Road
2	Schmall	Bryan & Tamara	679-2406	680	Reston Road
3	Dowdy	Nathan	679-4914	718	Reston Road
4	Dowdy	Mark	679-8947	301	Lockwood Road
1	Johnson	Lonnie & Betty	679-8879	203	Lockwood Road
2	Kline	Donna		552	Reston Road
3	Willis	Carol	784-5337	530	Reston Road
4	Young	Herbert & Edith	679-8508	356	Lockwood Road
1	Hallett	Marwood & Cynthia	740-504-3008	156	Moonhill Road
2	Morrow	Jesse & Amanda	679-9595	206	Moonhill Road
3	McMahon	James		208	Moonhill Road
4	Sawyer	Thomas & Paula	679-9597	105	Gumdrop Lane
1				111	Gumdrop Lane
2	Cox	Edna		155	Gumdrop Lane
3	Rudd	Jeffery & Diana	679-2891	9738	State Hwy 42
4	Smario	Joseph & Patricia	679-7988	9724	State Hwy 42
1	Ritzman	Charles		172	Gumdrop Lane
2	Urbaniak	James		9220	State Hwy 42
3	Broyles	Nylah		9184	State Hwy 42
4	Beckett	Diana	679-5804	8530	State Hwy 42
1	Anderson	Jesse & Phyllis		8478	State Hwy 42
2	Argall			8432	State Hwy 42

The following residences do not have anyone residing.

Address		Town	State	Zip

C. Log of Events

(To be completed during the emergency, start a new form if emergency level changes)

Dam Name: Wageman County: Douglas

Emergency Condition: Flood/overtop Internal Erosion Movement Structural

When and how was the event detected? _____

Recent Weather conditions: _____

General description of the emergency situation: _____

Emergency level (1, 2 or 3)

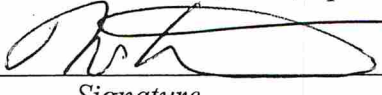
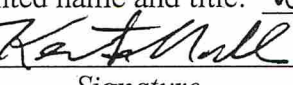

Actions and Event Progression

Date	Time	Measurement/water level/crack width/etc.	Action/event progression - taken by

Report prepared by: _____ Date: _____

D. Signatures of responsible parties

By my signature, I acknowledge that I, or my representative, have reviewed this plan and concur with the tasks and responsibilities assigned herein for me and my organization.

1.  Douglas County Sheriff's, Emergency Management 9/23/14
Signature Organization Date
Printed name and title: Wayne A. Stinson, Emergency Manager
2.  Oregon Water Resources Dept 10/3/14
Signature Organization Date
Printed name and title: Keith Mills, Dam Safety Engineer
3.  Landowner 10-9-14
Signature Organization Date
Printed name and title: Carolyn A. Dowdy, Landowner
4. _____
Signature Organization Date
Printed name and title: _____
5. _____
Signature Organization Date
Printed name and title: _____
6. _____
Signature Organization Date
Printed name and title: _____
7. _____
Signature Organization Date
Printed name and title: _____
8. _____
Signature Organization Date
Printed name and title: _____
9. _____
Signature Organization Date
Printed name and title: _____
10. _____
Signature Organization Date
Printed name and title: _____
11. _____
Signature Organization Date
Printed name and title: _____

E. Maintenance of EAP's and Revisions

EAP annual review: The dam owner will review and, if needed, update the EAP at least once each year. The EAP annual review will include the following:

1. Calling all contacts on the two notification charts in the EAP to verify that the phone numbers and persons in the specified positions are current. The EAP will be revised if any of the contacts have changed.
2. Contacting the designated incident commander to verify the phone numbers and persons in the specified positions. In addition, the dam owner will ask if the person contacted knows where the EAP is kept and if responsibilities described in the EAP are understood.
3. Calling the locally available resources to verify that the phone numbers, addresses, and services are current.

Revisions: The dam owner is responsible for updating the EAP document. The EAP document held by the dam owner is the master document. When revisions occur, the dam owner will provide the revised pages and a revised revision summary page to all the EAP document holders. The document holders are responsible for revising outdated copy of the respective document(s) whenever revisions are received. Outdated pages shall be immediately discarded to avoid any confusion with the revisions.

EAP periodic test: The dam owner will host and facilitate a periodic test of the EAP's. The periodic test will consist of a meeting, including a tabletop exercise. At the discretion of the dam owner, other organizations that may be involved with an unusual or emergency event at the dam are encouraged to participate. Before the tabletop exercise begins, meeting participants will visit the dam during the periodic test to familiarize themselves with the dam site.

F. Record of Holders of Control Copies

Copy Number	Organization	Person receiving copy
1	Land Owner 1200 Reston Road	
2	Oregon Water Resources	Dam Safety Engineer
3	EAP Author	Agent Copy
4	Douglas County Sheriffs	Dispatch
5	Douglas County Sheriffs	Emergency Management
6	Tenmile Rural Fire	Station Chief
7	Oregon State Police	
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

G. Record of Revisions and Updates

Revision Number	Date	Revisions made	By whom

H. Glossary

Abutment - That part of the valley side against which the dam is constructed. The left and right abutments of dams are defined with the observer looking downstream from the dam.

Appurtenant – This is used for any structure on or around the dam, other than the dam itself; that is critical to the function of the dam.

Berm - A nearly horizontal step (bench) in the upstream or downstream sloping face of the dam.

Boil - A disruption of the soil surface due to water discharging from below the surface. Eroded soil may be deposited in the form of a ring (miniature volcano) around the disruption.

Breach - An opening through the dam that allows draining of the reservoir. A controlled breach is an intentionally constructed opening. An uncontrolled breach is an unintended failure of the dam.

Conduit - A closed channel (round pipe or rectangular box) that conveys water through, around, or under the dam.

Control section - A level (often concrete or rock) location which water discharges through the spillway.

Crest - The top of the dam, usually level. It is not the top of the conduit or the base of the spillway.

Cross section - A drawing that represents a slice through the dam showing elevation vertically and direction of natural water flow horizontally from left to right.

Dam - An artificial barrier generally constructed across a watercourse for the purpose of impounding or diverting water.

Dam failure - The uncontrolled release of a dam's impounded water.

Dam Operator - The person(s) with responsibility for the operation and maintenance of dam.

Dam Owner – The owner as listed on the Oregon dam safety database,

Drain - A water collection system of sand and gravel and typically pipes along downstream portion of the dam, constructed to collect seepage and convey it to a safe outlet.

Drainage area (watershed) - The geographic area on which rainfall flows into the dam.

Drawdown - The lowering or releasing of the water level in a reservoir over time or the volume lowered or released over a particular period of time.

Emergency - A condition that develops unexpectedly, endangers the structural integrity of the dam and/or downstream human life and property, and requires immediate action.

Emergency Action Plan (EAP) - A formal document identifying potential emergency conditions that may occur at the dam and specifying preplanned actions to minimize potential failure of the dam or minimize failure consequences including loss of life, property damage, and environmental impacts.

Evacuation map - A map showing the geographic area downstream of a dam that should be evacuated if it is threatened to be flooded by a breach of the dam or other large discharge.

Filter - The layers of sand and gravel in a drain that allow seepage through an embankment to discharge into the drain without eroding the embankment soil.

Freeboard - Vertical distance between a stated water level in the reservoir and the top of dam.

Groin - The area along the intersection of the face of a dam and the abutment.

Height - The vertical distance between the dam crest and the lowest point at the downstream toe, often in the bed of the outlet channel.

Incident Commander – A public official designated to manage the emergency response.

Inundation area or map - The area downstream of the dam that would be flooded by a dam breach.

Outlet works - An appurtenant structure that provides for controlled passage of normal (principal spillway) water flows through the dam.

Piping - Progressive internal erosion of soil by seepage flow and forces.

Riprap - A layer of large rock, precast blocks, bags of cement, or other suitable material, generally placed on an embankment or along a watercourse as protection against wave action, erosion, or scour.

Risk - A measure of the likelihood and severity of an adverse consequence.

Seepage - The natural movement of water through the embankment, foundation, or abutments of the dam.

Slope instability - The movement of a mass of earth down a slope on the embankment or abutment of the dam, or a natural failure (of most concern above the dam or in the reservoir).

Spillway (auxiliary or emergency) - The appurtenant structure that provides the controlled conveyance of excess water through, over, or around the dam.

Spillway capacity - The maximum discharge the spillway can safely convey with the reservoir at the maximum design elevation.

Spillway crest - The lowest level at which reservoir water can flow into the spillway.

Tailwater - The body of water immediately downstream of the embankment at a specific point in time.

Toe of dam - The junction of the upstream or downstream face of an embankment with the ground surface.

I. PMF Flood Wave Summary

A PMF flood caused by a sudden breach of the dam is estimated to inundate:
(26) homes and portions of (2) roads.

River	Reach	DS Distance (mi)	Flood Wave Arrival Time (hr:min)	Peak of Flood Wave Arrival Time (hr:min)	Max Depth (ft)	Max WSEL (ft)	Max Q (cfs)
Tenmile Cr.	Upper	0.00	0:00	0:10	4.91	765.9	12,150
Tenmile Cr.	Upper	0.50	0:05	0:15	8.57	731.4	9,148
Tenmile Cr.	Upper	1.05	0:15	0:25	10.93	711.7	5,900
Tenmile Cr.	Upper	1.56	0:20	0:30	9.47	691.7	8,562
Tenmile Cr.	Lower	2.06	0:30	0:45	6.07	686.9	2,923
Tenmile Cr.	Lower	2.49	0:40	0:55	5.79	668.8	2,629
Tenmile Cr.	Lower	2.94	0:50	1:10	5.35	661.8	2,352
Tenmile Cr.	Lower	3.58	1:10	1:30	6.13	651.4	2,005
Tenmile Cr.	Lower	3.97	1:20	1:45	7.28	646.4	1,492
Tenmile Cr.	Lower	4.52	1:35	2:10	5.53	637.2	1,362
Tenmile Cr.	Lower	5.01	1:50	2:25	4.17	628.3	1,291
Olalla Cr.	Lower	5.48	2:15	3:10	5.47	621.8	1,049
Olalla Cr.	Lower	5.95	2:30	3:25	4.69	611.6	1,043
Olalla Cr.	Lower	6.53	2:55	4:10	4.91	606.8	862